

What is claimed is:

- 1 1. A method to assemble a pre-curved bolster plate to one side of a substrate
2 having a first side and a second side, comprising:
3 attaching a component to an electrical contact area on said first side of said
4 substrate; and
5 attaching said pre-curved bolster plate on said second side of said substrate,
6 wherein said pre-curved bolster plate is attached to said second side opposite said
7 electrical contact area on said first side of said substrate.
- 1 2. The method of claim 1, wherein said component is a land grid array (LGA)
2 component.
- 1 3. The method of claim 1, wherein said substrate is selected from a group of
2 substrates consisting of: a printed circuit board (PCB), a multi-chip module (MCM),
3 and a flexible substrate.
- 1 4. The method of claim 1, wherein said pre-curved bolster plate includes a
2 material selected from the group consisting of: a stainless steel alloy, a powder-coated
3 spring steel alloy, a plated spring steel alloy, a painted spring steel alloy, a titanium
4 steel alloy, a carbon steel alloy, a magnesium alloy, and an aluminum alloy.
- 1 5. The method of claim 1, wherein said pre-curved bolster plate has a spherical
2 curvature.
- 1 6. The method of claim 1, wherein said pre-curved bolster plate has a cylindrical
2 curvature.
- 1 7. The method of claim 1, wherein said pre-curved bolster plate has a radius of
2 curvature in excess of 100 inches (254 centimeters).

- 1 8. A method to fabricate a pre-curved bolster plate, comprising:
2 selecting a set of physical dimensions of said pre-curved bolster plate;
3 estimating an initial radius of curvature for said pre-curved bolster plate;
4 modeling said pre-curved bolster plate after assembly on a substrate;
5 estimating a more precise radius of curvature for said pre-curved bolster plate
6 after modeling said pre-curved bolster plate after assembly on said substrate;
7 cutting said pre-curved bolster plate according to said set of physical
8 dimensions; and
9 stamping said pre-curved bolster plate to achieve said more precise radius of
10 curvature.
- 1 9. The method of claim 9, wherein said pre-curved bolster plate is fabricated from
2 a material selected from the group of materials consisting of: a stainless steel alloy, a
3 powder-coated spring steel alloy, a plated spring steel alloy, a painted spring steel alloy,
4 a titanium steel alloy, a carbon steel alloy, a magnesium alloy, and an aluminum alloy.
- 1 10. The method of claim 9, wherein said pre-curved bolster plate is stamped to
2 achieve a spherical curvature.
- 1 11. The method of claim 9, wherein said radius of curvature is greater than 100
2 inches (254 centimeters).
- 1 12. The method of claim 9, wherein said pre-curved bolster plate is stamped to
2 achieve a cylindrical curvature.
- 1 13. An assembled substrate, comprising
2 a substrate having a first and a second side, and an electrical contact area on
3 said first side;
4 an electrical component having a plurality of leads attached to said electrical
5 contact area of said substrate; and

6 a pre-curved bolster plate attached to said second side of said substrate opposite
7 said electrical contact area of said substrate.

1 14. The assembled substrate of claim 13, wherein said substrate is selected from the
2 group of substrates consisting of: a printed circuit board (PCB), a multi-chip module
3 (MCM), and a flexible substrate.

1 15. The assembled substrate of claim 13, wherein said component is a land grid
2 array (LGA) component.

1 16. The assembled substrate of claim 13, wherein said pre-curved bolster plate is
2 fabricated from a material selected from the group of materials consisting of: a
3 stainless steel alloy, a powder-coated spring steel alloy, a plated spring steel alloy, a
4 painted spring steel alloy, a titanium steel alloy, a magnesium alloy, and an aluminum
5 alloy.

1 17. The assembled substrate of claim 13, wherein said pre-curved bolster plate has a
2 spherical curvature.

1 18. The assembled substrate of claim 13, wherein said pre-curved bolster plate has a
2 cylindrical curvature.

1 19. The assembled substrate of claim 13, wherein said pre-curved bolster plate has a
2 radius of curvature in excess of 100 inches (254 centimeters).

1 20. The assembled substrate of claim 13, wherein said pre-curved bolster plate has a
2 radius of curvature less than 100 inches (254 centimeters).